Nissan Yissachar, Ph.D.
Associate Professor, Principal Investigator
Laboratory for Host-Microbiome Interactions
The Goodman Faculty of Life Sciences
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Nissan Yissachar, Ph.D.

Academic Positions

2024-present **Associate Professor**
Principal Investigator, Laboratory for Host-Microbiome Interactions
The Goodman Faculty of Life Sciences
Bar-Ilan Institute for Nanotechnology and Advanced Materials
The Gonda Multidisciplinary Brain Research Center
Bar-Ilan University, Ramat-Gan, Israel, 5290002

2017-2024 **Senior Lecturer (Assistant Professor)**
Principal Investigator, Laboratory for Host-Microbiome Interactions
The Goodman Faculty of Life Sciences
Bar-Ilan Institute for Nanotechnology and Advanced Materials
The Gonda Multidisciplinary Brain Research Center
Bar-Ilan University, Ramat-Gan, Israel, 5290002

2011-2017 **Post-Doctoral Research Fellow**
Division of Immunology, Department of Microbiology and Immunobiology, Harvard Medical School, Boston, MA
Mentors: Prof. Diane Mathis and Prof. Christophe Benoist.
Specialty: Interactions between the gut microbiota and the immune system.

2008-2011 **Post-Doctoral Research Fellow**
Department of Immunology, Weizmann Institute of Science, Rehovot, Israel.
Mentor: Prof. Nir Friedman z"l
Specialty: Systems biology and Immunology.

Education

2004-2008 **Ph.D.** (Molecular biology and Biochemistry).
Faculty of Life Sciences, Bar-Ilan University, Ramat-Gan, Israel.
Mentor: Dr. Benny Motro.
Specialty: Molecular and cell biology.

2002-2004 **M.Sc.** (Biochemistry; express M.Sc. track), **Magna Cum Laude**.
Faculty of Life Sciences, Bar-Ilan University, Ramat-Gan, Israel.
Mentor: Dr. Benny Motro.

2000-2003 **B.Sc.** (Biology), **Magna Cum Laude**.
Faculty of Life Sciences, Bar-Ilan University, Ramat-Gan, Israel.

Early Professional Experience

2010-2011 **Teaching assistant** in Molecular Biology course.
Department of Chemical Engineering, Sami Shamoon College of Engineering.

2004-2008 **Teaching assistant** in Biochemistry and Biotechnology courses.
Faculty of Life Sciences, Bar-Ilan University, Israel.

1999 **Application engineer**, Asia-Pacific division, 'Comverse network systems', Israel.

1994-1998 **Team leader (Lieutenant),** Center of Computing and Information Systems, Israel Defense Forces.

Awards and fellowships

2025 Visiting Professor Program of the Bavarian State Ministry of Science and the Arts

2022 Best lecturer award, Bar-Ilan University (top 10 among >800 lecturers)

2020 Cancer research award by the Gessner fund for medical research, Israel

2018 Israeli Cancer Association award for excellence research

2016 Travel fellowship award for ILANIT conference, FISEB, Israel.

2012-2013 Schuyler Pierce Memorial Fellowship award, Harvard Medical School.

2007 Selected to participate in the 57th meeting of Nobel Laureates (Medicine and Physiology) at Lindau, Germany.

2006-2008 Doctoral fellowships for excellence, Faculty of Life sciences, Bar-Ilan University.

2005-2008 Doctoral fellowships for excellence, by the president of Bar-Ilan University.

2003 Bar-Ilan University scholarship for excellence students in the express M.Sc. track.

2002 Selected to participate in the Karyn Kupcinet International Science School at the Weizmann Institute of Science. Research advisor: Prof. Atan Gross.

2001 Selected to participate in the life sciences summer program at the Weizmann Institute of Science.

Activities and positions (scientific community)

2021-2023 Member of the scientific advisory committee related to "Cancer, Immunology and Physiology", ILANIT conference by FISEB (Federation of the Israel Societies for Experimental Biology).

2019 External collaborator of the PhD program on 'Food, Health and Longevity', Università del Piemonte Orientale, Novara, Italy.

2018-2022 Member of the program committee for the joint Broad Institute-ISF symposium

2018-2024 Review Editor in Microbiome in Health and Disease, part of the journal 'Frontiers in Cellular and Infection Microbiology'.

2014-2015 Organizer and administrator of the 'Critical Discussion Group' for Israeli postdocs at Harvard Medical School. 'BioAbroad' sponsors the group.

2012-2013 Initiator and organizer of a seminar series for post-doctoral fellows: "How to start and run your lab". Department of Microbiology and Immunobiology, Harvard Medical School.

Publications in reviewed journals

(***** = equal contribution; **#** = corresponding author)

Preprints

- Bootz-Maoz H, Del Mare-Roumani S, Naim G, Azriel O, Cohen A, Bennet Y, Sharon E, Amidror S and **Yissachar N. #** Uncoupling Drug and Microbiota Contributions to Chemotherapy-Induced Gut Toxicity. **BioRxiv** (2026) and submitted for publication
- Holiar V, et al., **Yissachar N**, et al., Biton M. Epithelial MHC II antigen presentation dynamically informs intestinal homeostasis and injury. **BioRxiv** (2026) and in revision (Science Immunology)

Published Articles

- Naim G*, Romano-Zadaka H*, Amidror S*, et al., and **Yissachar N. #** Optogenetics-integrated gut organ culture system connects enteric neurons dynamics and gut homeostasis. **Nature Communications** (2025)
- Hegelmaier T, et al., **Yissachar N #**, Haghikia A #. Supplementation with short-chain fatty acids and the prebiotic 2FL improves clinical outcome in PD. **Scientific Reports** (2025)
- Goldberg K, et al., **Yissachar N**, Hayouka Z and Merbl Y. Proteasome-derived defense peptides facilitate cell-autonomous innate immunity against pathogens. **Nature** (2025)
- Dürholz K, et al., **Yissachar N**, Schett G, Rothhammer V, Zaiss M. Gut-specific H3R signaling orchestrates microglia-dependent resolution of peripheral inflammation. **Journal of Clinical Investigations** (2025)
- Romano-Zadaka H and **Yissachar N #**. From Microbiota to Menu: Predicting Individual Responses to Dietary Components. **Gut** (2025)
- Agranyoni O, et al., **Yissachar N**, Pinhasov A, Navon-Venezia S. Colon Impairments and Inflammation Driven by an Altered Gut Microbiome Leads to Social Behavior Deficits Rescued by Hyaluronic acid and Celecoxib. **BMC Medicine** (2024)

- Bootz-Maoz H, Simon A, Del Mare-Roumani S, Bennet Y, Toister E, Romano H, Zheng D, Amidror S, Elinav E and **Yissachar N**. **#** Ex vivo intestinal permeability assay (X-IPA) for tracking barrier function dynamics. **npj Biofilms and Microbiomes** (2023)
- Bootz-Maoz H*, Pearl A*, Melzer E*, Malnick S*, et al., and **Yissachar N**. **#** Diet-induced modifications to human microbiome reshape colonic homeostasis in irritable bowel syndrome. **Cell Reports** (2022)
- Sassone-Corsi M, Azriel S, Simon S, Ramanan D, Ortiz-Lopez A, Chen F, **Yissachar N**, Mathis D and Benoist C. Avoidance of T cell activation by sequestering gut pathobionts in intraluminal casts. **PNAS** (2022)
- Monzani R, et al., **Yissachar N**, Visciglia A, Pane M, Amoruso A and Corazzari M. The Gut-Ex-Vivo System (GEVS) is a dynamic and versatile tool for the study of DNBS-induced IBD in BALB/C and C57BL/6 mice, highlighting the protective role of probiotics. **Biology**. (2022).
- Azriel S, Bootz H, Shemesh A, Amidror S, and **Yissachar N**. **#** An Intestinal Gut Organ Culture System for Analyzing Host-Microbiota Interactions. **J. Vis. Exp.** (2021).
- Gagliardi M, et al., **Yissachar N**, Boccafoschi F, Corazzari M. A Gut-Ex-Vivo system to study gut inflammation associated to Inflammatory Bowel Disease (IBD). **Biology**. (2021).
- Gagliardi M, et al., **Yissachar N**, Boccafoschi F, Zucchelli S and Corazzari M. Gut-Ex-Vivo system as a model to study gluten response in celiac disease. **Cell Death Discovery**. (2021).
- Grosheva I, et al., Straussman R, **Yissachar N**, Elinav E, and Geiger B. High-Throughput Screen Identifies Host and Microbiota Regulators of Intestinal Barrier Function. **Gastroenterology**. (2020)
- Chen Z, et al., **Yissachar N**, Huang F, Chu Y, and Yan D. β-Arrestin 2 Quenches TLR Signaling to Facilitate the Immune Evasion of EPEC. **Gut Microbes**. (2020)
- Duscha A*, Gisevius B*, Hirschberg S*, **Yissachar N*****, et al., Linker RA, Gold R, and Haghikia A. Propionic acid shapes the course of multiple sclerosis by a distinct immunomodulatory mechanism. **Cell**. (2020).
- **Yissachar N. #** Ménage à trois: regulation of host immunity by enteric neuro-immune-microbiota cross talks. **Current Opinion in Neurobiology**. (2019)
- **Yissachar N**, Zhou Y, Ung L, Lai NY, Mohan JF, Ehrlicher A, Weitz DA, Kasper DL, Chiu IM, Mathis D and Benoist C. An Intestinal Organ Culture System Uncovers a Role for the Nervous System in Microbe-Immune Crosstalk. **Cell.** (2017)

  » This work was highlighted by Ivanov, **Trends in Immunology** (2017)
  » This work was highlighted by Thomas, **Nature Reviews Gastro. and Hepato.** (2017)
  » This work was recommended in **F1000 Prime** (2017)

- **Yissachar N***, Sharar-Fischler T*, et al., and Friedman N. Dynamic response diversity of NFAT isoforms in individual living cells. **Molecular Cell**. (2013)

» This work was highlighted by Kalo and Shav-Tal, **Genome Biology** (2013)

- Ndifon W*, Gal H*, Shifrut E, Aharoni R, **Yissachar N**, et al., and Friedman N. Chromatin conformation governs T cell receptor Jβ gene segment usage. **PNAS**. (2012)

- Salem H*, Rachmin I*, **Yissachar N***, et al., and Motro B. Nek7 kinase targeting leads to early mortality, cytokinesis disturbance and polyploidy. **Oncogene**. (2010)

- Noy-Lotan S, Dgany O, Lahmi R, Marcoux N, Krasnov T, **Yissachar N**, Ginsberg D, Motro B, Resnitzky P, Yaniv I, Kupfer GM and Tamary H. Codanin-1, the protein encoded by the gene mutated in congenital dyserythropoietic anemia type I (CDAN1), is cell cycle-regulated. **Haematologica**. (2009)

- **Yissachar N**, Salem H, Tennenbaum T and Motro B. Nek7 kinase is enriched at the centrosome, and is required for proper spindle assembly and mitotic progression. **FEBS Letters**. (2006)

- Feige E, Shalom O, Tsuriel S, **Yissachar N** and Motro B. Nek1 shares structural and functional similarities with NIMA kinase. **BBA - Molecular Cell Research**. (2006)

Chapters in books:

- Partney H and **Yissachar N**. Chapter: Regulation of Host Immunity by the Gut Microbiota. Book: Evolution, biodiversity, and a reassessment of the hygiene hypothesis. Series: Progress in inflammation research. **Springer-Nature**. (2022)

Patents:

2025 US Provisional Patent application (63/941,780), MICROBIOME-BASED METHODS FOR TREATING CANCER

Invited talks (selected):

2026 Yale's Immunobiology Department Seminar Series, Yale University, New Haven, USA

2026 6th European Summer School on Nutrigenomics, Fabriano (AN), Italy

2026 Microbial colloquium, Faculty of Medicine, Münster University, Germany

2026 Department of Internal Medicine Seminar, Erlangen University, Germany

2026 Israel Immunological Society, Tel Aviv, Israel

2025 Israel Society for Microbiology, Tel Aviv, Israel

2024 The International Congress of Mucosal Immunology (ICMI), Copenhagen, Denmark

2022 Metagenics Institute Congress on Autoimmune Diseases, Gold cost, Australia

2022 World of Microbiome conference, Vienna, Austria

2021 Merck group / Sigma-Aldrich, Microbiome R&D, Jerusalem, Israel

2021 Boehringer Ingelheim Pharma, Cancer immunology and immune modulation, Germany and USA (on-line)

2020 The Berlin Institute for Medical Systems Biology (MDC Berlin), Germany

2019 MIBIOC conference (Microbiota in Cancer), Fondazione IRCCS Istituto Nazionale dei Tumori, Milan

2019 St. Josef Hospital, Ruhr-University, Bochum, Germany

2019 The Israeli Society for Microbiology, Weizmann Institute of Science, Israel

2018 MicrobiotaMi conference, Milano, Italy

2018 Department of Health Sciences, Università del Piemonte Orientale, Novara, Italy

2018 Sixth Annual Broad-ISF Symposium, Broad Institute, Cambridge, MA

2017 Mead-Johnson Nutrition Symposium, Amsterdam.

2017 ILANIT/FISEB conference, Eilat, Israel.

2016 Harvard Digestive Disease Center, Boston Children's Hospital.

2016 Channing Network Science Seminar, Channing Division of Network Medicine, Harvard University.

2015 Cell Symposia: Human Immunity and the Microbiome in Health and Disease. Montreal, Canada.

2012 Microbiology and Immunobiology Department annual retreat, Harvard Medical School.

2011 Computational Biology Seminar, School of Computer Science and Engineering, The Hebrew University of Jerusalem, Israel.

2010 The 4th Meeting of the Israel Live Imaging Forum, The Hebrew University of Jerusalem, Israel.